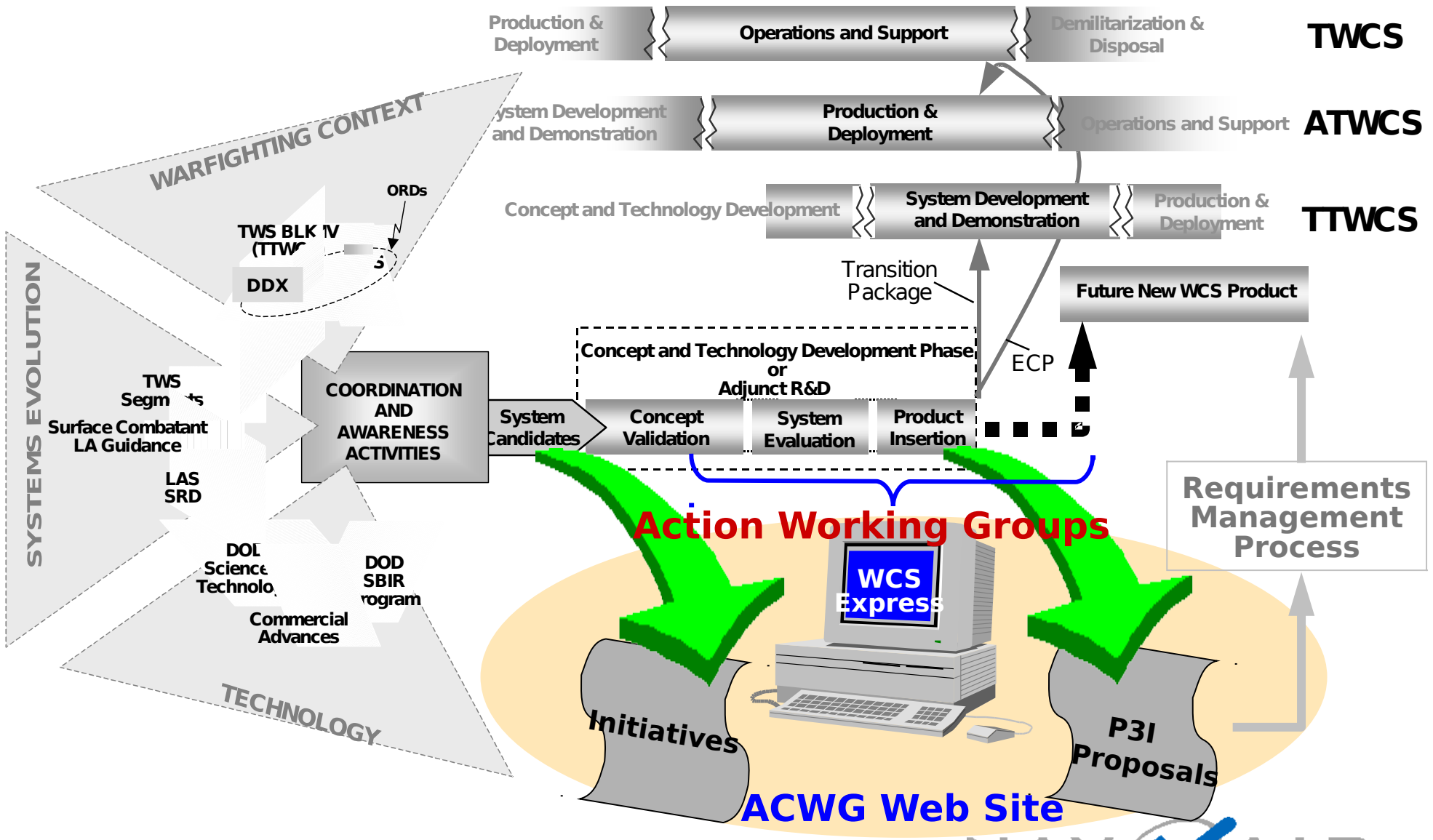
PMA-282 Roadmap & Technology Needs

Lindel Holden, NSWCDD

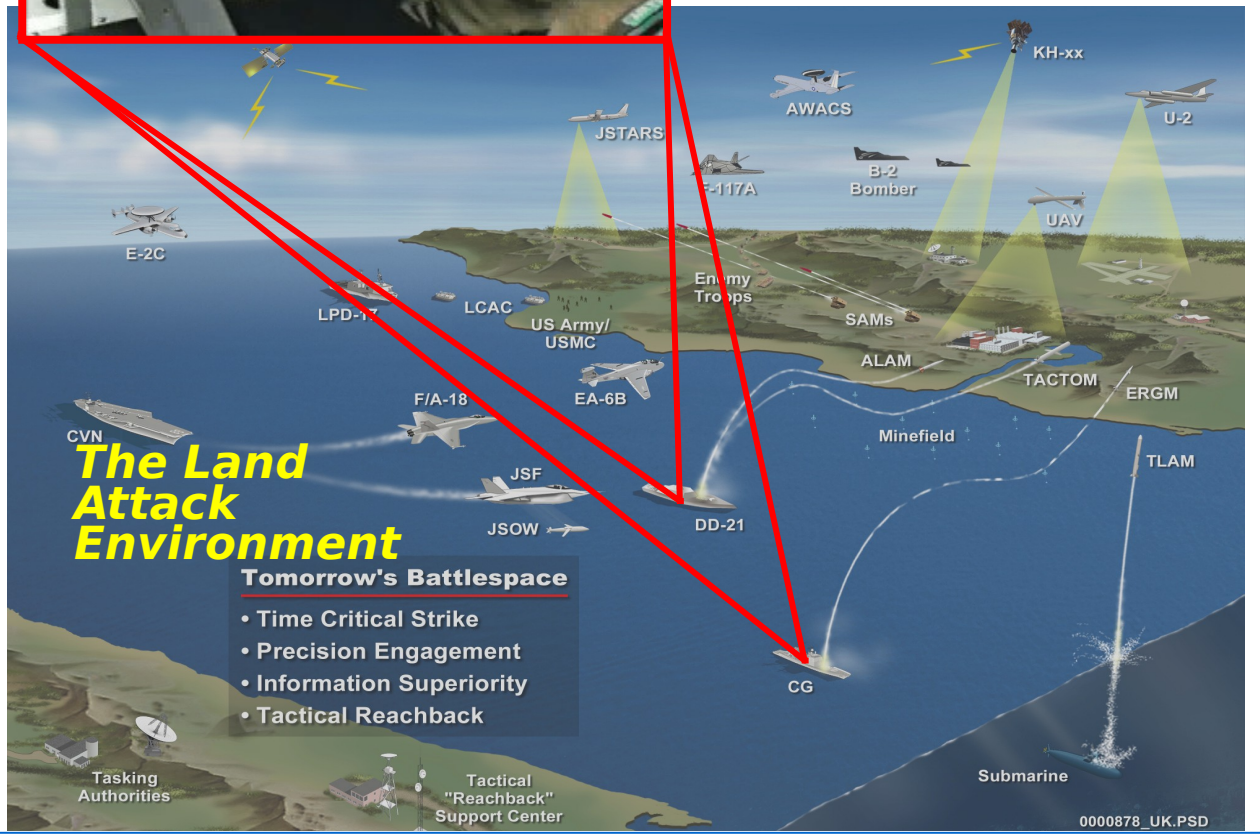
5 May 2004

PMA-282 Advanced Concepts Process

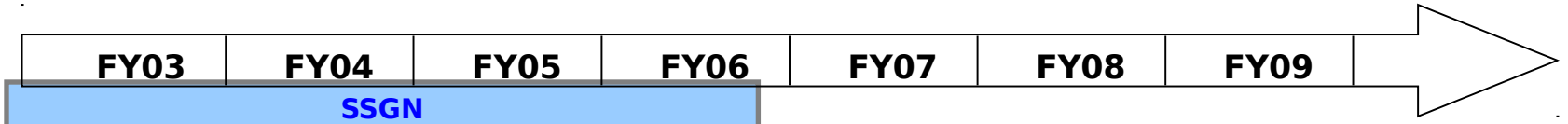


TWCS Improvement Concepts

- Support of Time Critical Strike
- Human Centered System Design
- Land Attack Warfare Integration
- Open, Maintainable Computing Architecture



TTWCS Evolution Roadmap



TTWCS Builds

v5

SSGN
Seawolf/VA Class
Torpedo Tube Launch (TTL)
TTWCS+NFCS
Integrated Training Architecture Level 1-3
Common Build
Task Manager
Tactical Decision Aids:Post Launch Control,
Cell Preselect, Improved Automated
Engagement, semi a

v6

Land Attack HSI ATTD

Fully implement Task Centered HCI Design
Presentation Layer
Strike Planning and Coordination
Upgrades
Comm
Digit

v7

Dynamically Optimized Team Performance SBIR
Intelligent Advisor for HCI Design SBIR
Computing Architecture Studies Required
Multi-Level Security Development Initiative

Tech Refresh (Computing Upgrades) *
Common Presentation Layer
Common TTWS Displays
Multimodal Workstations
Integrated Land Attack Weapons System
Tactical Decision Aids
Integrated Training Architecture Level 4 & 5
Strike Planning and
Upgrad
SAASM/P

v8 and Beyond

Global Information Grid Enterprise Services
Optimization of Loitering Weapons SBIR
Visualization and Predictions of Ground Vehicle Movements SBIR
4-D Battlespace Visualization Required

Supersonic/Hypersonic Missile Control
Launch Platform Targeting Mobile Targets
Evolving Land Attack System of Systems
DD(X) Integration

* POM-06 funding issue

Complementary Initiatives

- Small Business Innovative Research (SBIR):
  - Current Projects:
    - Intelligent Advisor for HCI Design:
      - Phase II began August 2003
    - Multimodal Interface Design Advisor
      - Phase II began December 2003
    - Automated Transition from Usability Prototype to Tactical Software
      - Phase II began March 2003
    - Intelligent Test Data Analysis Technology
      - Phase II award in near future
    - Optimizing Planning & Decision Support for Loitering Weapons
      - Downselect for Phase II in progress
  - Topics in pre-solicitation: (1 May)
    - Display & Visualization of Ground Vehicle Movement Predictions
    - Automated Software Analysis of Large, Mixed-Programming Language Systems

PMA 282 Technology Needs

- Operator/Team Support
- C4I Support
- Weapon Employment
- Computing
- Lifecycle Support
- Development Tools

PMA 282 Technology Needs

Operator/Team Support

- Operator & Team Workload Management
- Task Automation
- Doctrinal Control of Tasks
- Advanced Human Systems Integration
- Tactical Decision Support
- State-of-the-Art Training

C4I Support

- Assured, Timely Delivery of Tactically Relevant Data
- Robust Weapon Data Links
- Distributed Database Technologies

PMA 282 Technology Needs

Weapon Employment

- Expanded In-Flight Missile Monitoring & Control
- Dynamic Loiter Planning
- Battlespace Deconfliction
- Battle Damage Assessment
- Advanced Land & Maritime Tracking Algorithms

Computing

- Advanced Computing Architectures
- Dynamic Fault Tolerance
- Dynamic Load Balancing (Processing)

PMA 282 Technology Needs

Lifecycle Support

- Remote Software Upgrade
- Remote Support
- Simplified/Automated System Administration & Maintenance

Development Tools

- Tools to Support Simulation-Based Acquisition
- Improved Software Portability Tools
- User-Centered Design Tools
- Manpower Analysis
- Software Development Tools
- Test and Evaluation Support
- Human/Team Performance Assessment

PMA-282 Point of Contacts for Weapons ATRB

- LCDR Joe Mauser
  PMA-282T2B
  Email: Joe.Mauser@navy.mil
  Phone: (301)757-6210

- Lindel Holden
  NSWCDD Code K71
  Email: HoldenLE@nswc.navy.mil
  Phone: (540)653-7187